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Determinant of Capital Adequacy Requirements: The Role of Bank-Specific Factors in Banks Listed on The Indonesia Stock Exchange

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ABSTRACT

Bank businesses have a systemic risk that could impact the economic system of a country. The regulator requires commercial banks to maintain a minimum capital requirement to absorb the exposed risk's loss. This study aimed to examine the determinants of bank capital adequacy based on bank-specific factors such as operating efficiency, liquidity, and bank size.The quantitative research approach was applied to this study by using the multiple regression method. The panel data contains commercial banks listed on the Indonesia stock exchange between the year 2015 to 2020, and a purposive sampling method was used to set up the sample. This study found that partially the operating efficiency of the banks listed in Indonesia stock exchange has a significant negative impact on capital adequacy. The bank liquidity has a significant negative impact on capital adequacy, but the bank size does not affect capital adequacy. Simultaneously, the operating efficiency, liquidity, and bank size significantly impact bank capital adequacy.

1. Introduction

Banking is an industry that has a strategic role in supporting economic growth;banking also serves as an economic catalyst. Banks are obliged to implement sound bankingpractices to maintain asystem ofthe economy because the bank's failure can also impact systemic risks that can affect a country'ssystem ofeconomy.Banks are also a *"well regulated"* industry because all bank activities are regulated and supervised by the banking regulator, the Financial Services Authority(OJK),and previously this function was implemented by Bank Indonesia (BI).

Basel Committee on Banking Supervision (BCBS), located in Basel, Switzerland, took the initiative to issue a banking risk management framework that is currently a guideline for international banks, including Indonesia. This framework is motivated by various world economic crises that have occurred and evidence that the adverse impact of the performance of banks that have *a systemic risk* to the economy of a country. In 1988BCBS issued the *International Convergence of Capital Measurement and Capital Standard,*known as the Basel *1 Accord,*which first introduced the provision of a minimum bank capital of 8%(Goodhart, 2011). Bank Indonesia as the banking regulator, also implements policies related to the provision of minimum capital referring to the *Basel Accord* framework issued by BCBS practical since 2001(Bank Indonesia, 2001).

Banks are businesses that have risks varied enough that banks need to have sufficient capital according to the level of risk taken by each bank. The more complex the activity of a bank, the more complex the risks it faces. The adequacy of bank capital becomes very important to absorb losses on the dangers that occur. Kunt et al. (2006) and Podpiera (2004) prove that a bank with low capital adequacy (CAR) will result in the bank being riskier.

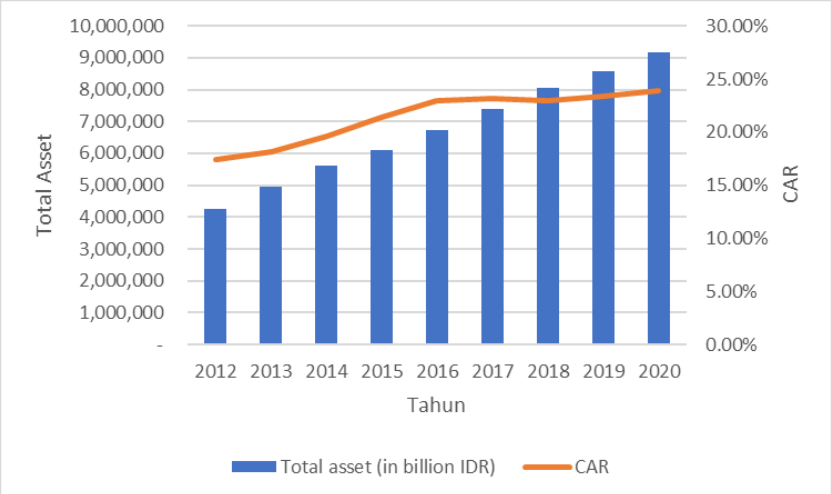

Fig 1. Development of Total Assets and CAR of Commercial Banks
Source: Indonesian Banking Statistics from OJK, data processed

In the past decade, the bank has continued to grow over time with average annual asset growth of 10% but is likely to decline.This growth was also followed by an increase in CAR value, which in 2012 amounted to 17.43% and in 2020 reached 23.89%.

Research on the bank's financial performance has been conducted a lot, but focusing on the adequacy of bank capital or capital adequacy ratio (CAR) as a dependent variable has not been done much, especially in Indonesia. In contrast, CAR is

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a significant indicator of financial performance for the bank's business continuity. Various previous studies showed different research results so that there is a gap in the study, Bateni et al. (2014) suggested that the size of the bank has a significant negative effect on CAR, but other researchers proved that the size of the bank has a significant positive impact on CAR(Shingjergji and Hyseni, 2015).

2. Literature Review and Hypothesis Development

2.1 Bank

Based on the Law of the Republic of Indonesia on Banking, a bank is a business entity that collects funds from the public in the form of deposits and distributes them back to the public in lending and or other documents to improve people's standard of living(President RI, 1992).

According to Ismail (2010), a bank is a financial institution that the public needs in conducting financial transactions and other transactions. Latumaerissa (2013) suggests that the bank servesas the agent of trust (activities carried out based on the principle offaith), agent of development (bank responsibility in supporting the smoothness of economic transactions), and as an agent of service(banks must be able to provide other services).

The Law of the Republic of Indonesia on Banking stipulates two types of banks in Indonesia, namely commercial banks and rural banks. Commercial banks are banks that carry out business activities conventionally or based on sharia principles in providing services in payment traffic. Rural banks carry out business activities conventionally or based on Sharia Principles whose actions do not provide services in payment traffic(President RI, 1992).

2.2 Financial Performance

The company's financial performance can be measured and analyzed based on financial statements and other reports, such as published reports containing indicators of economic performance based on the company's financial statements. According toMuslich (2000) in Rahayuand Aisjah (2013),financial performance is a financial achievement described in the company's financial statements, namely balance sheet, income statement, cash flow, and financial performancerepresentthe company's business. The company's financial performance can be measured by analyzing and evaluating the company's financial statements, otherwise referred to as accounting-based performance measurements.

The financial ratio analysis method is a method that is widely used in improving the company's economic performance. According toHanafi (2015),there are five types of financial ratios: 1). Liquidity ratio: a ratio that aims to measure the company's ability to meet short-term liabilities. 2) Activity ratio: a ratio that aims to measure the company's ability to use its assets efficiently. 3)L*everage ratio:* a ratio that aims to measure the company's ability to meet all its obligations. 4) Profitability ratio: a ratio that aims to measure the company's ability to generate profit;5) Market ratio: a ratio that aims to measure market performance relative to book value, income, or dividends.

Various determinant factors known as bank-specific factors are used in various studies. Bank-specific factors are factors within the bank's control, such as capital, profitability, bank size, liquidity, cost efficiency, and risk. Hasanov et al. (2018) suggest that banks have specific factors as internal factors of the bank, which include profitability as measured by return on assets (ROA) or return on equity (ROE), capital, the size of banks that generally use proxy total assets, liquidity, loans, and deposits.

The central bank of Indonesia (BI), as the previous banking regulator, set several indicators of bank financial performance that must be published consisting of KPMM ratio, Return on Asset (ROA), Return on Equity (ROE) ratio, non-performing productive assets, and non-performing non-productive assets against total productive assets and non-productive assets, non-performing productive assets against total productive assets, CKPN financial assets to productive assets, the ratio of Non-performing Loans (NPL), ratio of Operating Expenses to Operating Income (BOPO), Cost to IncomeRatio, Net Interest Margin ratio(Bank Indonesia, 2001).

2.3 Capital Adequacy

OJK as the banking regulator requires commercial banks to maintain the Capital Adequacy Ratio(CAR) above the provisionsfollowing the risk profile to ensure that the bank has sufficient capital to absorb losses incurred following its risk exposure. Mishkin (2000) stated that the capital requirements determined by the regulator affect the bank's policy in determining its capital structure.The bank's capital adequacy requirements aim to absorb risks arising from bank failure or bankruptcy. Equity is a buffer that protects the depositors in the bank against the bank's risky assets; by increasing capital adequacy, the bank increases the cushionfor protection of the depository customers(Blum and Hellwig, 1995).

Hadjixenophontosand Volos (2018) suggest differences in viewpoints between regulators and banks; regulators want banks to have higher CAR to improve liquidity and anticipate bank failures while banks themselves expect low CAR. The importance of CAR as a minimum capital provision obligation to ensure the banking system's stability encourages much research. Onoh (2002) stated that capital adequacy is part of the capital that can effectively protect the bank from business failure absorbing losses incurred.

The Central Bank of Indonesia(2001),through the rules of Minimum Capital Requirement Obligation of Commercial Banks,stipulates the calculation formula of bankcapital adequacy as follows:

$$\text{CAR} = \frac{\text{Capital}}{\text{Risk} - \text{Weighted} \quad \text{Asset}} \; x \; 100\%$$

Capital = Common Equity Tier 1 + Additional Tier 2 + Additional Tier 3.
Risk Weighted Asset (RWA) = RWACredit Risk + RWA Market Risk + RWA Operational Risk.

This study used the Capital Adequacy Ratio (CAR) as a proxy for bank capital adequacy.CAR is a calculation of the bank's capital needs by considering the risks taken by the bank reflected inthe Risk-Weighted Assets (RWA).

2.4 Operational Efficiency

Efficiency in economics refers to a system to produce maximum output from an input. Efficiency is a comparison between the work produced and the information used (Mahmudi, 2010). Efficiency is an essential factor that determines competitive advantage in business competition. Banks that cannot maintain a competitive advantage will be difficult to develop during very tight business competition in the era of globalization(Kumar et al., 2020).

According to Hadadet al. (2003) inMuharam(2007),there are three approaches to defining input and outputrelationships in the financial activities of a financial institution:

a. Asset Approach

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The asset approachreflectsthe primary functionof a financial institution as the creator of loan credit. In this approach, *the output* is defined as the form asset.

b. Production Approach

This approach considers financial institutions to be producers of deposit accounts and loan loans and defines *output* as the amount of labor, capital expenditures on fixed assets, andother materials.

c. Intermediary Approach

This approachsees a financial institution as an intermediary. In this case,the inputof bank activitiessuch as labor costs, capital, and interest payments on deposits, with output measured in loan and financial investment.

On the intermediary approach,inputs include all deposits,fixed assets, and administrative and general costs (overheadcosts). In contrast,the outputconsists of all Loans and Investments.The intermediary approach is more relevant to be used at the bank level or industry level, while the production approach is more relevant at the branch level of the bank(Noor et al., 2020).

This study uses an intermediary approach using the bank profit/loss component.In this study, the researcher used financial performance indicators of operating cost to operating income ratio (Biaya Operasional terhadap Pendapatan Operasional or BOPO) as a proxy for bank operationalefficiency.

$$\text{BOPO} = \frac{Operational\ \ cost}{Operational\ \ revenue} \text{ x } 100\%$$

Operational cost = Interst expense + Non interest opeartional expense

Operational revenue = Intersest income + Non interest operational income

2.5 Liquidity

The main functions of banks through public fundraising activities in the form of third-party deposits and disbursement of funds in the form of loans have implications on liquidity risk.General savings funds are generally liquid because theycan be withdrawn at any time or in the short term, while on the other hand, the loans provided are usually not refundable or more medium-term or long-term.

According toKasmir (2013), liquidityis the ability of a company to pay its debts or obligations that are due.One of the functions of financial management of a company is to control liquidity, namely the ability of a company to meet its financial obligations in the short term or to be paid immediately (Mamduh, 2015). Titman et al. (2014) suggest that liquidity is how quickly a company can convert assets into cash without losing value.

Liquidity problems indicate thatthe bank's inability to meet its obligations can significantly impact the bank's reputation and may impact the bank's business continuity.Rivai et al. (2007) stated that the bank needs to exercise liquidity control by assessing the bank's ability to maintain and meet adequate liquidity needs and adequacy of liquidity risk management.According toMamduh (2015), companies that tend to keep high liquidity maintain *liquidassets* that are too high will impact less optimal profitability.Banks that are aggressive in lending tend to have a very high Loan to Deposit Ratio (LDR),while banks that are conservative in lending tend to have low LDR.

The Central Bank of Indonesia stipulates that the lower limit of LDR, which later changed to LFR (Loanto FundingRatio) of 78%, while the upper limit is set at 92% (Bank Indonesia, 2015). Bank Indonesia (2001) developedthe calculation formula of Loan to Deposit Ratio (LDR) is as follows:

$$\text{LDR} = \frac{\text{Loan}}{\text{Third} - \text{party deposit}} \text{x} 100\%$$

Loan: total credit given to third parties (excluding credit to other banks)

Third-party deposit: total current accounts, deposits, savings accounts (excluding current accounts and interbank deposits)

This study used LDR as a proxy for bank liquidity. According toFriantoPandia (2012) inHantono (2017), LDR is a ratio that states how much funds have been placed by the depository customer to provide loans to debtors.The higher the LDR ratio than theless liquid a bank and vice versa; the lower the LDR ratio then, the more liquid a bank(Latumaerissa, 2014).

2.6 Bank Size

The company can be distinguished from its size; the company's size will describe the size of the small economies of scale of a company. Large-scale companies will undoubtedly require large resources and a large business capacity then can produce a large output as well.

Basyaib (2007) suggests that the company's size is a scale where it can be classified the size of the company in various ways, among others with the size of revenue, total assets, and total capital. The greater the size of income, total assets, and total capital will reflect the more vital state of the company. According to Ibrahim (2008),company size can be categorized according to a nominal size of money or *monetary units*, such as the company's amount of wealth or total sales in a single sales or market capitalization period. However, it can also be grouped based on the scale of operations commonly used by investors as one of the variables in decision-making.

Indonesia Government(2008) regulates micro, small and medium enterprises, dividing business groups into four categories: micro-businesses, small businesses, medium enterprises, and large businesses based on net worth and sales rate. Banks regulator OJK(2016) issued a policy on business activities and office networks based on the bank's core capital. According to its core capital, the bank is divided intofourBUKU groups, BUKU abbreviation of Bank UmumberdasarkanKegiatan Usaha or Commercial Banks by Business Activities.

In this study, variable bank size using proxy total *asset*using natural logarithm(Ln) of total asset. The size of each bank'stotal assets varies greatly with a large difference invalue so that it can lead to extreme value; it is necessary to normalize with natural logarithm transformation (Ln) of totalassets.

$$\text{Bank size} = \text{Ln}\ (Total\ asset)$$

According to Halim & Hanafi (2016),Assets are economic benefits that will be received in the future or will be controlled by the company as a result of transactions or events.Assets are also an economical source that companies will use to carry out their activities. The main attribute is the ability to provide services or benefits to a company that uses the asset.

2.7 Previous Study

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Based previous research shows different results so that there is a gap in research. Research on the effect of operational efficiency on the adequacy of bank capital has not been done internationally and in Indonesia, but one study conducted by Krisna (2008) on commercial banks in Indonesia shows that BOPO does not influence CAR.

Research conducted byShingjergji andHyseni (2015) proved that LDR had a significant adverse effect on CAR; this finding is in line with Krisna (2008), Sudiyatno et al. (2019), Mursal et al. (2019).While Barus (2011) and Ali (2019) showed similar results, LDR had a significant effect on CAR but positively.

Büyükşalvarcıand Abdioğlu(2011) proved that the size of the bank did not affect CAR, according to research from Thoa andAnh (2017).Different results were presented by Bateni et al. (2014), Klepczarek (2015), Sudiyatno et al. (2019), Kalifa and Bektas (2017), Mursal et al. (2019), Ali (2019), Hadjixenophontos andVolos (2018),Aktas et al. (2015) which proves that the size of the bank has a significant negative effect on CAR, but Shingjergji andHyseni (2015) found that the size of the bank had a significant positive impact on CAR.

2.8 Hypothesis Development

Based on the background that has been stated that capital adequacy is an essential factor for the continuity of the bank's business to be able to absorb losses on various bank risks, the leading indicators of specific financial performance of banks, especially indicators of operational efficiency, liquidity and bank size as a determinant of the adequacy of bank capital, the hypothesis presented in this study as follows:

H1: Operational efficiency significantly affectsbank capital adequacy in commercial banks listed on the Indonesia Stock Exchange.

H2: Liquidity significantly affectsbank capital adequacyin commercial banks listedon the Indonesia Stock Exchange.

H3: The bank size has asignificant effect onbank capital adequacy in commercial banks listedon the Indonesia Stock Exchange.

H4: Operational efficiency, liquidity, and bank size simultaneously significantly affect bank capital adequacy in commercialbankslistedon the Indonesia Stock Exchange.

3. Research Methods

3.1 Data

The type of data used in this study is secondary data in a 4th quarter bank publication report published by banks. Publication reports are obtained from the *bank's website and* obtained from the Financial Services Authority (OJK)*website.*This study uses panel data because it uses observation data on many banks and in several years.

3.2 Population and Samples

The research was conductedon commercial banks, both conventional andshariah,listed on the Indonesia Stock Exchange with the observation period of 2015 to 2020. Sampling is done using *the purposive sampling*method with certain sample selection criteria.

3.3 Operational Definitions

Operational definitions of independent variables and dependent variables used in this research are as follows:

Table 1.
Variable Operational Definitions

No	Research Variables	Variable Proxy	Description
1.	Capital Adequacy	CAR	$CAR = \frac{Capital}{Risk - Weighted\ \ Assets}\ x\ 100\%$
2.	Operational Efficicency	BOPO	$BOPO = \frac{Operational\ \ costl}{Operational\ \ revenue}\ x\ 100\%$
3.	Liquidity	LDR	$LDR = \frac{Loan}{Third\ \ Party\ \ Deposit}\ x\ 100\%$
4.	Bank size	Total Asset	Bank size = Ln(Total Asset)

3.4 Data Analysis Methods

The data analysis methods used in this study are descriptive statistics and parametric inferential statistics. In this study, to test the hypothesis, researchers used multiple regression analysis techniques. The multiple linear regressionequations used are as follows:

$$CAR_{i,t} = \alpha + \beta_1 BOPO_{i,t} + \beta_2 LDR_{i,t} + \beta_3 TA_{i,t} + e$$

In research with panel data, it is necessary to select the best model from three model options. The panel's data model options consist of The Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM).CEM and FEM models are models that use the Ordinary Least Square (OLS) method, while REM is a model that uses the Generalized Least Square (GLS) process.Some test selection panel data models include the Chow test used to compare CEM and FEM, Hausman test to compare FEM and REM, and Lagrange multiplier test to compare REM and CEM.

The classic Assumption Test conducted on the selected model consists of a normality test requiring normally distributed residuals, a multicolinearity test that requires no correlation between independent variables, a heteroschedasticity test that requires no heteroschedasticity, and an autocorrelation test that requires the model no autocorrelation issue.The Generalized Least Square (GLS) method does not require autocorrelation testing on the research model because it accommodates autocorrelation issues.

Models that qualify for the classic assumption test will be hypothesized testsusing a t-test that aims to prove the influence of independent variables partiallyon dependent variables and an F-test aimed at establishing the impact of independent variables simultaneously on dependent variables.

4. Research Result and Discussion

4.1 Descriptive Statistical Analysis

Table 2.

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Descriptive Statistics

	CAR	BOPO	LDR	TA
Mean	20,92700	82,84325	84,93483	32,22025
Median	21,08500	83,29000	87,11500	32,47500
Maximum	31,04000	112,0900	113,5000	34,89000
Minimum	12,97000	58,24000	48,7900	29,31000
Deviation Standard	3,572863	10,56638	12,18082	1,571211
Total Observations	120	120	120	120

Source: secondary data, processed

The average CAR is at 20.9%, indicating that commercial banks registered with IDX generally have CAR well above the minimum CAR requirement of 8%; even the minimum CAR of 12.97% is still above the minimum CAR requirement limit. The bank's efficiency is still quite good because it shows the BOPO average of 82.8% is still below 100%, meaning that banks generally can still make a profit. However, some banks suffer losses with a maximum BOPO ratio of 112%. Banks, in general, can still maintain good liquidity according to the limits set by the OJK as a banking regulator that expects banks to maintain liquidity in LDR between 78% to 92%, the average LDR of banks is at 84.9%. However, banks have low liquidity with a maximum LDR of 113.5%, which indicates that the bank provides loans more than third-party deposit funds so that banks are exposed to high liquidity risk.

On the other hand, banks that are very conservative in lending are shown with a minimum LDR of 48.7%. The bank size varies significantly with significant deviation standards, some banks have total assets of less than Rp 10 trillion, but some banks have total assets of more than Rp 1,000 trillion.In general, the average total assets of commercial banks in this study stood at Rp 262 trillion.

4.2 Panel Data Regression Model Estimation

Alternative models of regression panel data produced in this study are as follows:

Common Effect Model (CEM) :

$$CAR_{i,t} = 76.68213 + -0.191230BOPO_{i,t} + -0.068514LDR_{i,t} + -1.058149TA_{i,t} + e_{i,t}$$

Fixed Effect Model (FEM) :

$$CAR_{i,t} = -6.913634+ -0.143465BOPO_{i,t} + -0.060113LDR_{i,t} + 1.391406TA_{i,t} + e_{i,t}$$

Random Effect Model (REM) :

$$CAR_{i,t} = -58.74022+ -0.140656BOPO_{i,t} + -0.074274LDR_{i,t} + -0.616146TA_{i,t} + e_{i,t}$$

Based on a series of tests for the selection of regression models using Chow test, Hausman test, and Lagrange Multiplier test obtained the best model is *Random Effect Model* (REM) with multiple linear regression model equations as follows:

$$CAR_{i,t} = -58.74022+ -0.140656BOPO_{i,t} + -0.074274LDR_{i,t} + -0.616146TA_{i,t} + e_{i,t}$$

4.3 Classic Assumption Test

a. Normality Test

The method used for the normality test is JaarqueBera which produces a probability value or significance of 0.605264 greater than α 0.05; thus, it can be concluded that the research model meets the normality test requirements because it has residuals normal distribution.

b. Multicollinearity Test

Table 3.
Multicollinearity Test Results

CORRELATION			
	BOPO	LDR	TA
BOPO	1	-0.09708349801152244	-0.6014313523580885
LDR	-0.09708349801152244	1	0.2596753150060751
TA	-0.6014313523580885	0.2596753150060751	1

Source: secondary data, processed

The correlation value between independent variables is less than 0.8. Thus, it can be concluded that the research model qualifies for the multicollinearity test because there is no correlation between independent variables.

c. Heteroschedasticity Test

Table 4.
Heteroscedasticity Test Results

Dependent Variable: Absolute Residual				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	10.50963	5.493526	1.913093	0.0582
BOPO	0.012296	0.020055	0.613113	0.5410
LDR	-0.009775	0.014392	-0.679194	0.4984
TA	-0.258990	0.138998	-1.863271	0.0650

Source: secondary data, processed

The probability value (significance) ofBOPO, LDR, TA variable against *AbsoluteResidual,*which respectively is 0.5410, 0.4984, 0.0650> 0.05, then it can be concluded that the research model qualifies for a proven heteroscedasticity test with no heteroscedasticity issue.

4.4 Hypothesis Test

Based on the regression carried out against the variables of research obtained, the results of regression as follows:

Table 5.
Random Effect Model Regression Test Results

Dependent Variable: CAR			
Total panel (balanced) observations: 120			
Variable	**Coefficient**	**t-Statistic**	**Prob.**

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C	58.74022	4.574302	0.0000
BOPO	-0.140656	-3.993084	0.0001
LDR	-0.074274	-2.890505	0.0046
TA	-0.616146	-1.734858	0.0854
R-squared	0.157425		
Prob(F-statistic)	0.000174		

Source: secondary data, processed

a. Hypothesis Test 1 (H1)

Based on Table 5,the t-test proves that the influence of operational efficiency (BOPO) variables partially on capital adequacy (CAR) shows the significance of p-valueof 0.0001<0.05;thus, BOPO has a significant impact on CAR with a negative relationship. H1 is proven because this study showsthatBOPO partially has a significant influence on CAR.

b. Hypothesis Test 2 (H2)

Based on Table 5,the t-testprovesthat the influence of liquidity (LDR) variables partially on CAR showsthe significance of p-valueof 0.0046<0.05;thus, LDR has a significant impacton CAR with a negative relationship. H2 is proven thattheresults of this studyshow thatLDRpartiallyhas a significanteffect on CAR.

c. Hypothesis Test 3 (H3)

Based on Table 5,the t-test proves that the influence of Total Asset (TA) variables partially on CAR showsthe significance of p-valueof 0.0854>0.05;thus, Total Asset (TA) does not influenceCAR. H3 is not provenbecause the results of this studyshow thatTotal Asset (TA) partiallydoes not affectCAR.

d. Hypothesis Test 4 (H4)

Based on Table 5,the F-test shows the model has a p-value (significance) F-statisticis 0.000174< 0.05; thus,BOPO, LDR, Total Asset (TA)simultaneously have a significant influenceon CAR.The results of this study are followingH4 that BOPO, LDR, Total Asset (TA)simultaneously have a significant impacton CAR.

4.5 Discussion of Research Results

The results prove that operational efficiency(BOPO)significantly influencescapital adequacy (CAR); the results also showed that BOPO has a negative relationship to CAR; the higher the BOPO, the smaller the CAR and vice versa. Banks that work efficiently will increase their profitability through increased profits. Following the efficiency method with the intermediary efficiency approach, an efficient bank with the exact input operational costs will generate a greater output of operating income. Increased profitability due to increased efficiency will impact bank capital, particularly on retained earnings which are a component of Common Equity Tier 1 (CET1). The increase in bank capital will increase CAR, assuming the bank does not aggressively expand its credit. The average LDR data of 84.9% shows that banks do not generally conduct aggressive credit expansion.

This study also proves that liquidity (LDR)significantly influences CAR according to the hypothesis proposed in this study. This study also showed that LDR has a negative relationship to CAR; the more significant the LDR value, the smaller the CAR value and vice versa.Banks are aggressive in credit or loan growth is reflected in the large LDR value, the upper limit of LDR set by OJK as a regulator is 92%. Banks with an LDR value of more than 100% then have a higher loan exposure than deposits.Increased credit exposure will undoubtedly impactgrowing Risk-Weighted Assets (RWA), especially credit risk RWA, assuming banks can maintain credit risk weighting at the same or better level. The increase in RWA will impact the car, which is decreasing, assuming the bank operates at the same level of capital capacity.

This study proves that the size of the bank (total assets) has no effecton CAR, not in line with the hypothesis proposed.With the minimum capital adequacy policy determined by OJK as a regulator, every bank that will expand its business through lending and investment will be limited by CAR according to the risk profile of each bank, meaning that banks cannot increase assets through business expansion without being supported by an adequate amount of capital. In addition, one of the factors influencing the bank's business expansion inIndonesia's macroeconomic condition. Based on Indonesian banking statistics since 2015, the growth of bank assets does not exceed 10% per year and tends to decrease further. This situation can also be seen from the average CAR of commercial banks at the level of 20.9% above the minimum limit of 8% due to business expansion that tends to experience a decrease in growth. This means that banks generally have sufficient capital to expand their business, but there is limited market penetration, especially in credit expansion due to economy slowdown or declining economic growth. Based on this condition, every bank with large, medium, or small assets generally has a reasonably safe capital above the minimum capital requirement.

5. Conclusion

This study shows that commercial banks listed on the Indonesia Stock Exchange can maintain capital adequacy with an average CAR of 20.9% above the minimum limit of 8% to 14% set by the OJK depends on the bank's risk profile.

This study successfully investigated and proved that operational efficiency significantly affects commercial banks' capital adequacy and has a negative relationship. Banks that are more efficient in operation will be able to increase their capital adequacy. In general, banks can control their operational efficiency with an average BOPO of 82.8%, with the BOPO ratio can still create profit.

This study also showed that liquidity significantly affects the capital adequacy of commercial banks and has a negative relationship. Banks that have lower liquidity levels, reflected by higher LDR, will have lower capital adequacy. The liquidity of commercial banks with an average LDR of 84.9% indicates that bank liquidity, in general, is still under control within the range determined by the OJK between 79% to 92%.

This study also proves that the bank size does not affect the adequacy of commercial banks' capital. In this study, the size of commercial banks varies greatly, with total assets less than Rp 10 trillion up to total assets of more than Rp 1,000 trillion.

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This study shows that simultaneously operational efficiency, liquidity, and bank size significantly influencebank capital adequacy but do not act as the dominant variable that affects CAR because it contributes a minor influence of 15.7% to CAR.

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